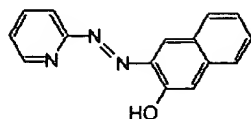


L Number	Hits	Search Text	DB	Time stamp
1	1	("5985540").PN.	USPAT	2003/10/11 18:35
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3	6	5985540.URPN.	USPAT	2003/10/11 17:47
5	0	((sulfide or sulfur) adj3 (determine or determination or calculate or calculation or measure or measurement or quantify or quantification)) and enzyme	EPO; JPO; DERWENT	2003/10/11 18:37
6	0	((sulfide or sulfur) adj3 (determine or determination or calculate or calculation or measure or measurement or quantify or quantification)) and lyase	EPO; JPO; DERWENT	2003/10/11 18:37
7	2	((sulfide or sulfur) adj3 (determine or determination or calculate or calculation or measure or measurement or quantify or quantification)) and (iron or zinc)	EPO; JPO; DERWENT	2003/10/11 18:38
8	0	((sulfide or sulfur) adj3 (determine or determination or calculate or calculation or measure or measurement or quantify or quantification)) and (nitroso or nitrosoaminophenol or pyridylazo)	EPO; JPO; DERWENT	2003/10/11 18:38
9	0	((sulfide or sulfur) adj3 (determine or determination or calculate or calculation or measure or measurement or quantify or quantification)) and (color or chromophore)	EPO; JPO; DERWENT	2003/10/11 18:39
4	28	(sulfide or sulfur) adj3 (determine or determination or calculate or calculation or measure or measurement or quantify or quantification)	EPO; JPO; DERWENT	2003/10/11 18:39

## 1-(2-Pyridylazo)-2-naphthol

[85-85-8]



Unit Product code

1 g

5 g P002

C<sub>15</sub>H<sub>11</sub>N<sub>3</sub>O = 249.27 10 g**Appearance** : orange yellow or orange red crystals**Absorbance** : > 0.60 (around 470nm)**m.p.** : 138 - 140 °C**Sulfated ash** : < 1 %

---

[|Storage|](#) [|Applications|](#) [|Specifications|](#) [|MSDS|](#) [|FAQ|](#) [|NMR|](#) [|IR|](#)


---

PAN is a metal indicator as well as a photometric reagent for heavy metal ions and rare earth metal ions. This reagent is slightly soluble in acidic solutions, and soluble in alkaline solutions. Proton dissociation constants are reported to be pK<sub>a1</sub> = 2.9 and pK<sub>a2</sub> = 11.6 (μ = 0.1, NaClO<sub>4</sub>, at room temperature). The aqueous solution is yellow below pH 12 and red above 12. Distribution coefficients of chloroform/water and carbon tetrachloride/water are reported to be log K<sub>D</sub> = 5.4 and log K<sub>D</sub> = 4.0, respectively. PAN is applicable to determine Sc [*Bull. Chem. Soc. Jpn.*, **59**, 1962 (1986)].

---

Table 2-2-9 Formation constant of metal-PAN chelate(at 25 °C)

Metal	logK <sub>ML</sub>	logK <sub>ML2</sub>	Conditions
Cu(II)	>12		50 % of Dixane
Cu(II)	15.6	8.4	50 % of Dixane
Mn(II)	8.5	7.9	50 % of Dixane
Ni	12.7	12.6	50 % of Dixane
Zn	11.2	10.2	50 % of Dixane
Al	12.9		50 % of ethanol
Ga	15.1		50 % of ethanol
In	13.1		50 % of ethanol
Eu	12.3	11.4	μ = 0.05, ClO <sub>4</sub> <sup>-</sup>
logK <sub>ML3</sub> = 10.4		logK <sub>ML4</sub> = 9.5	

Table 2-2-10 Conditions of photometric determination using PAN

Metal	Conditions	λ <sub>max</sub> (nm)	ε (x 10 <sup>4</sup> )	Extraction solvent	Range (ppm)
Cd	pH 8.7 - 10	555	4.9	chloroform	~ 2.5
Hf	pH 4, 40% of methanol	545	3.9	H <sub>2</sub> O	0.2 - 3.6
Mn(II)	pH 8.8-9.6, NH <sub>3</sub> , KCN	562	4.8	chloroform	0.2 - 1.2
Ni	pH 3.5 - 5.2	570	5	benzene	~1.5
Os(VIII)	pH 8.0 - 9.5, Triton-100	550	2.8	chloroform	~ 9.2
Zn	pH 8 - 9.5	555	5.6	H <sub>2</sub> O	0.2 - 2
rare earth metal		530	6 - 7	chloroform	~ 2

---

**Applications in :**

Chelating titration : Bi, Cd, Ce, Cu, Ga, In,  
Extraction photometry : Ag, Bi, Cd, Co, Cr, Cu,

---

## References

1. S. Shibata, "2-Pyridylazo Compounds in Analytical Chemistry.", Ed. by H. A. Flaschka and A. J. Barnard, Jr., "Chelates in Analytical Chemistry", IV, *Marcel Dekker, Inc.*, NY(1972).

CORPORATE SOURCE: Dept. of Chemical Engineering, GDUT, Canton, 510090,  
 Peop. Rep. China  
 SOURCE: Guangdong Gongye Daxue Xuebao (1997), 14(Suppl.),  
 24-26  
 CODEN: GDAXFR; ISSN: 1007-7162  
 PUBLISHER: Guangdong Gongye Daxue  
 DOCUMENT TYPE: Journal  
 LANGUAGE: Chinese  
 ABSTRACT:  
 The color of Ag(I)-5-Br-PADAP (2-(5-bromo-2-pyridylazo)-5-diethylaminophenol) complex is faded by **sulfide** in a NaOAc-HOAc buffer soln. (pH 5.3-6.6) in the presence of Na dodecyl sulfate. The apparent molar absorptivity of the complex was 1.2 .times. 10<sup>5</sup> L mol<sup>-1</sup> cm<sup>-1</sup>, and the degree of decoloring of the complex was proportional to the concn. of \*\*\*sulfide\*\*\* at 0-5 .mu.g/25 mL. The proposed method was applied to the detn. of **sulfide** in wastewater with satisfactory results.

L3 ANSWER 5 OF 16 CAPLUS COPYRIGHT 2003 ACS on STN  
 ACCESSION NUMBER: 1985:178288 CAPLUS  
 DOCUMENT NUMBER: 102:178288  
 TITLE: 1-(2-Pyridylazo)-2-naphthol as an agent for  
 the determination of cyanide and **sulfide**  
 AUTHOR(S): Snyder, William Dean  
 CORPORATE SOURCE: Georgia Inst. Technol., Atlanta, GA, USA  
 SOURCE: (1984) 138 pp. Avail.: Univ. Microfilms Int., Order  
 No. DA8425414  
 From: Diss. Abstr. Int. B 1985, 45(8), 2536  
 DOCUMENT TYPE: Dissertation  
 LANGUAGE: English  
 ABSTRACT: Unavailable

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16393 SULFIDE  
2016 SULFIDES  
17684 SULFIDE  
(SULFIDE OR SULFIDES)  
18356 THIOL  
5677 THIOLS  
21588 THIOL  
(THIOL OR THIOLS)  
53304 SULFUR

103 SULFURS  
 53350 SULFUR  
 (SULFUR OR SULFURS)  
 1350699 DETERMIN?  
 106221 QUANTIF?  
 234383 CALCULAT?  
 1050010 MEASURE?  
 L1 943 (SULFIDE OR THIOL OR SULFUR) (3W) (DETERMIN? OR QUANTIF? OR  
 CALCULAT? OR MEASURE?)

=> s l1 and (enzyme or enzymatic or lyase)  
 580871 ENZYME  
 214161 ENZYMES  
 709067 ENZYME  
 (ENZYME OR ENZYMES)  
 93199 ENZYMATIC  
 20 ENZYMATICS  
 93213 ENZYMATIC  
 (ENZYMATIC OR ENZYMATICS)  
 12571 LYASE  
 817 LYASES  
 12894 LYASE  
 (LYASE OR LYASES)  
 L2 103 L1 AND (ENZYME OR ENZYMATIC OR LYASE)

=> s l2 and (zinc or iron)  
 86902 ZINC  
 13 ZINCS  
 86903 ZINC  
 (ZINC OR ZINCS)  
 107988 IRON  
 174 IRONS  
 108055 IRON  
 (IRON OR IRONS)  
 L3 13 L2 AND (ZINC OR IRON)

=> d l3 1-13 kwic

L3 ANSWER 1 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
 TI Quantitative amino acid analysis of bovine NADH:ubiquinone oxidoreductase  
 (Complex I) and related **enzymes**. Consequences for the number of  
 prosthetic groups.  
 AB Bovine-heart NADH:ubiquinone oxidoreductase (EC 1.6.5.3; Complex I) is the  
 first and most complicated **enzyme** in the mitochondrial  
 respiratory chain. Biochemistry textbooks and virtually all literature on  
 this **enzyme** state that it contains one FMN and at least four  
**iron-sulfur** clusters. We show here that this statement is  
 incorrect as it is based on erroneous protein determinations. Quantitative  
 amino acid. . . be at least 1.3-1.4 mol FMN/mol Complex I. The spin  
 concentration of the electron paramagnetic resonance (EPR) signal ascribed  
 to **iron-sulfur** cluster N2 was **determined** and  
 accounted for 1.3-1.6 clusters per molecule of Complex I. These results  
 experimentally confirm the hypothesis (FEBS Lett. 485 (2000). . .  
 concentration of the EPR signal of the (2Fe-2S) cluster shows that this  
 hydrogenase also contains two FMN rroups. A third **enzyme** (Ech),  
 the membrane-bound (NiFe)-hydrogenase from Methanosarcina barkeri which  
 shows an even stronger evolutionary relationship with Complex I, behaves  
 rather normal. . .  
 IT . . .  
 Parts, Structures, & Systems of Organisms  
 heart: circulatory system; mitochondria  
 IT Chemicals & Biochemicals  
 NADH-ubiquinone oxidoreductase [EC 1.6.5.3, complex I]; **enzymes**

; **iron-sulfur cluster**; prosthetic groups

- L3 ANSWER 2 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
TI The presence of an **iron-sulfur cluster** in adenosine  
5'-phosphosulfate reductase separates organisms utilizing adenosine  
5'-phosphosulfate and phosphoadenosine 5'-phosphosulfate for sulfate  
assimilation.
- AB. . . phototrophic bacteria use adenosine 5'-phosphosulfate (APS) for  
assimilatory sulfate reduction, whereas bacteria and fungi use  
phosphoadenosine 5'-phosphosulfate (PAPS). The corresponding  
**enzymes**, APS and PAPS reductase, share 25-30% identical amino  
acids. Phylogenetic analysis of APS and PAPS reductase amino acid  
sequences from. . . sequences of the APS reductase cluster contained  
two additional cysteine pairs homologous to the cysteine residues involved  
in binding an **iron-sulfur cluster** in plants. Moessbauer analysis  
revealed that the recombinant APS reductase from *Pseudomonas aeruginosa*  
contains a (4Fe-4S) cluster with the same characteristics as the plant  
**enzyme**. We conclude, therefore, that the presence of an  
**iron-sulfur cluster determines** the APS  
specificity of the sulfate-reducing **enzymes** and thus separates  
the APS- and PAPS-dependent assimilatory sulfate reduction pathways.
- IT Major Concepts  
Enzymology (Biochemistry and Molecular Biophysics); Metabolism; Methods  
and Techniques
- IT Chemicals & Biochemicals  
adenosine 5'-phosphosulfate; adenosine 5'-phosphosulfate reductase  
**iron-sulfur cluster**; phosphoadenosine 5'-phosphosulfate
- L3 ANSWER 3 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
TI Evaluation of the protein concentration in **enzymes** via  
determination of sulfur by total reflection X-ray fluorescence  
spectrometry: Limitations of the method.
- AB. . . Total reflection X-ray fluorescence spectrometry (TXRF) offers many  
advantages for the identification of trace elements in biological samples  
like proteins, **enzymes**, tissues or plants. Because of difficult  
and time consuming isolations and cleaning procedures **enzyme**  
samples are often available in small amounts only. Using TXRF without any  
preliminary treatment, a 'screening' of such samples to. . . Mo and the  
alkaline earth metal Ca may be determined with high accuracy. A further  
aspect of the investigation of **enzymes** is the simple and  
simultaneous determination of light elements. Sulfur, especially, is of  
interest. This element is a component of two amino acids, methionine and  
cysteine, and of **iron-sulfur clusters** and may be used for easy  
and simultaneous calculation of the protein concentration. Hence  
quantitative determination of sulfur by. . . cross-check regarding of  
conventional quantitative determination of protein concentration by, e.g.  
the Lowry method. On the basis of two selected **enzymes** of  
different origins and molecular weights this paper will demonstrate the  
influence of bio-organic matrix and different buffer media on  
**sulfur determination** by TXRF. The influence of layer  
thicknesses of the dry residues and absorption or scattering effects will  
be discussed. The results indicate that in **enzymes** with low  
molecular weights and minor amounts of buffer components a reliable  
determination of sulfur is possible. By contrast, for **enzymes**  
stored in higher buffer concentrations poorer results are given on account  
of the matrix effects described.
- IT Major Concepts  
Enzymology (Biochemistry and Molecular Biophysics); Methods and  
Techniques
- IT Chemicals & Biochemicals  
NADH-Q oxidoreductase; calcium; copper; diisopropylfluorophosphatase;  
**iron**; molybdenum; nickel; **sulfur**;  
**determination**

RN 7440-70-2 (CALCIUM)  
7440-50-8 (COPPER)  
9032-18-2 (DIISOPROPYLFLUOROPHOSPHATASE)  
7439-89-6 (IRON)  
7439-98-7 (MOLYBDENUM)  
7440-02-0 (NICKEL)  
7704-34-9 (SULFUR)

L3 ANSWER 4 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
TI Mutations in the tether region of the **iron**-sulfur protein affect  
the activity and assembly of the cytochrome bcl complex of yeast  
mitochondria.

AB. . . Resolution of the crystal structure of the mitochondrial cytochrome  
bcl complex has indicated that the extra-membranous extrinsic domain of  
the **iron**-sulfur protein containing the 2Fe2S cluster is  
connected by a tether to the transmembrane helix that anchors the  
**iron**-sulfur protein to the complex. To investigate the role of  
this tether in the cytochrome bcl complex, we have mutated the. . .  
Ala-86, Ala-90, Ala-92, Lys-93 and Glu-95 and constructed deletion mutants  
DELTAVALA(88-90) and DELTAAMA(90-92) and an insertion mutant I87AAA88 in  
the **iron**-sulfur protein of the yeast, *Saccharomyces cerevisiae*.  
In cells grown at 30degreeC, **enzymatic** activities of the bcl  
complex were reduced 22-56% in mutants A86L, A90I, A92C, A92R and E95R,  
and the deletion mutants,. . . while activity of the insertion mutant  
was reduced 90%. No loss of cytochromes b or c-cl, detected spectrally, or  
the **iron**-sulfur protein, **determined** by  
quantitative immunoblotting, was observed in these mutants with the  
exception of the mutants of Ala-92 in which the loss of activity  
paralleled a loss in the amount of the **iron**-sulfur protein. EPR  
spectroscopy revealed no changes in the **iron**-sulfur cluster of  
mutants A86L, A90I, A90I, A92R or the deletion mutant DELTAVALA(88-90).  
Greater losses of both protein and activity were. . . in A90F grown at  
37degreeC. suggesting that these conserved alanine residues may be  
involved in maintaining the stability of the **iron**-sulfur protein  
and its assembly into the bcl complex. By contrast, no significant loss of  
**iron**-sulfur protein was observed in the mutants of Ala-86 in cells  
grown at either 30degreeC or 37degreeC despite the 50-70degree loss of  
**enzymatic** activity suggesting that Ala-86 may play a critical role  
in catalysis in the bcl complex.

IT . . .  
conserved amino acid residue; Glu-95: conserved amino acid residue;  
Lys-93: conserved amino acid residue; cytochrome bc-1 complex: crystal  
structure, mitochondrial; **iron**-sulfur protein: extrinsic  
domain, tether region

L3 ANSWER 5 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
AB Total Reflection X-Ray Fluorescence Spectrometry (TXRF) offers many  
advantages for the detection of trace elements in **enzymes** as  
compared to other well known analytical techniques like flame-AAS or  
ICP-AES because of the significantly smaller amounts of sample. . . Mn  
and Mo could be determined with high accuracy, in spite of the large  
bio-organic matrix. Besides the metals also **sulfur** can be  
**determined** in protein samples. The two terminal oxidases,  
cytochrome c oxidase and quinol oxidase, isolated from the soil bacterium  
*Paracoccus denitrificans*,. . . values. The investigations lead to the  
conclusion that the method is well suited for the quantitative  
determination of metals in **enzymes**, and in particular their  
molar ratios, and requires only small amounts of the biological sample  
without any extensive pretreatment.

IT Major Concepts

Biochemistry and Molecular Biophysics; Methods and Techniques

IT Chemicals & Biochemicals

copper: analysis, determination, assay; cytochrome c; **enzymes**



: analysis; **iron**: analysis, assay, determination; manganese: analysis, assay, determination; metal cofactors: analysis, assay, determination; metals: analysis, assay, determination; molybdenum: analysis, determination, assay; nickel: analysis, assay, determination; oxidases; quinol oxidase; respiratory chain complexes: analysis; trace elements: analysis, determination, assay; **zinc**: analysis, determination, assay

RN 7439-89-6 (**IRON**)  
7440-02-0 (**NICKEL**)  
7440-50-8 (**COPPER**)  
7440-66-6 (**ZINC**)  
7439-96-5 (**MANGANESE**)  
7439-98-7 (**MOLYBDENUM**)  
9035-73-8D (**OXIDASES**)  
9007-43-6 (**CYTOCHROME C**)

L3 ANSWER 6 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
TI Matrix-assisted laser desorption/ionization mass spectrometry analysis and **thiol-group determination** of isoforms of bovine cytochrome c oxidase, a hydrophobic multisubunit membrane protein.

AB. . . sequencing. For the investigation of the cysteine status 7-diethyl-amino-3-(4'-maleimidylphenyl)-4-methylcoumarin proved to be an excellent site-specific reagent. MALDI-MS with the SH-reacted **enzyme** indicates disulfide bridges only in subunit VII and a distorted tetrahedral S coordination of the **zinc** in subunit VI.

IT Major Concepts  
Enzymology (Biochemistry and Molecular Biophysics); Methods and Techniques

IT Chemicals & Biochemicals  
cytochrome c oxidase: **thiol-group isoform determination**; hydrophobic multisubunit membrane proteins; peptides; **zinc**; DNA

RN 9001-16-5 (**CYTOCHROME C OXIDASE**)  
7440-66-6 (**ZINC**)  
16734-12-6 (**DISULFIDE**)

L3 ANSWER 7 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
TI **Iron** is required to relieve inhibitory effects of NifL on transcriptional activation by NifA in Klebsiella pneumoniae.

AB. . . aerobic conditions or in the presence of combined nitrogen. In contrast to a previous report, we show that depletion of **iron** (Fe) from the growth medium with the chelating agent o-phenanthroline (20  $\mu$ -M) mimics aerobiosis or combined nitrogen in giving rise. . . NifL in vivo. Despite the Fe requirement in vivo, we have found no evidence that NifL contains Fe or an **iron-sulfur** (Fe-S) cluster. **Determination** of the molecular mass of an inhibitory form of NifL overproduced under aerobic conditions indicated that it was not posttranslationally. . . NifL inhibition under aerobic conditions, and attempts to relieve NifL inhibition in vitro by reconstituting Fe-S clusters with the NifS **enzyme** (Azotobacter vinelandii) were unsuccessful. Since we obtained no evidence that Fe acts directly on NifL or NifA, we postulate that. . .

IT Major Concepts  
Biochemistry and Molecular Biophysics; Genetics; Metabolism; Molecular Genetics (Biochemistry and Molecular Biophysics); Physiology

IT Chemicals & Biochemicals  
**IRON**; **NITROGEN**

IT Miscellaneous Descriptors  
ANAEROBIC NITROGEN-LIMITING CONDITIONS; GENE PRODUCT NIFA; GENE PRODUCT NIFL; GENE REGULATION; **IRON**; MOLECULAR GENETICS; NIFLA OPERON; TRANSCRIPTIONAL ACTIVATION

RN 7439-89-6 (**IRON**)  
7727-37-9 (**NITROGEN**)

- L3 ANSWER 8 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
 AB. . . water, and soil and sediment extracts using submitochondrial particles (SMP) has been developed. The assay utilizes the mitochondrial electron transfer **enzyme** complex, present in all eukaryotic cells. Prior developmental work with pure chemicals chosen from the U.S. Environmental Protection Agency's (EPA). . . electron transfer protocol and the whole-organism assay, and between the responses of the SMP electron transfer protocol and levels of **zinc** and **sulfur**, as **determined** by inductively coupled plasma spectroscopy.
- L3 ANSWER 9 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
 TI On the **iron**-sulfur cluster of adenosine phosphosulfate reductase from *Desulfovibrio vulgaris* (Hildenborough).  
 AB. . . multimer is formed, which reversibly changes into smaller units upon addition of salt. The smallest catalytically active unit of the **enzyme** has a molecular-mass of 186 kDa, as determined by gel-filtration chromatography and, therefore, an alpha-2-beta-2 stoichiometry is proposed. The protein was found to contain 5.6 +/- 1.1 **iron** and 4.4 +/- 0.6 acid-labile sulfur atoms/alpha-beta heterodimer. The reduced protein exhibits a single, rhombic S = 1/2 signal with. . . at low or at high ionic strength never resulted in more than 1 spin/alpha-beta heterodimer. Hence, it follows that the **iron** and sulfur atoms are arranged in one single cluster. The reduction potential of the **iron sulfur** cluster, **measured** in an EPR-monitored redox titration, was found to be -19 mV versus the normal hydrogen electrode (NHE) at pH 7.5. . . flavin behaves as a two-electron-transferring group; no evidence was obtained for a stabilization of the intermediate semiquinone state in the **enzyme**. Determination of the kinetic parameters of adenosine 5'-phosphosulfate (AdoPSO-4) reductase for its substrates resulted in K-m values for sulfite and. . . mu-M and 50 mu-M, respectively. It is proposed that AdoPSO, reductase contains a single novel Fe/S structure, possibly with an **iron**-nuclearity greater than four.
- IT Major Concepts  
 Enzymology (Biochemistry and Molecular Biophysics); Infection; Physiology  
 IT Chemicals & Biochemicals  
**IRON**; **SULFUR**; ADENOSINE PHOSPHOSULFATE REDUCTASE; HYDROGEN  
 RN 7439-89-6 (**IRON**)  
 7704-34-9 (**SULFUR**)  
 9027-75-2 (ADENOSINE PHOSPHOSULFATE REDUCTASE)  
 1333-74-0 (HYDROGEN)
- L3 ANSWER 10 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
 TI LOCALIZATION OF CHROMATOPHORE PROTEINS OF RHODOBACTER-SPHAEROIDES II. TOPOGRAPHY OF CYTOCHROME C-1 AND THE RIESKE **IRON SULFUR** PROTEIN AS **DETERMINED** BY PROTEOLYTIC DIGESTION OF THE OUTER AND LUMINAL MEMBRANE SURFACES.  
 AB. . . Exclusive and controlled digestion of the chromatophore interior was achieved after Ca2+-induced fusion with large unilamellar phosphatidylglycerol liposomes containing microencapsulated **enzyme**. Reaction center subunit H, which served as a marker for the outer surface, was degraded to a slightly smaller product. . . faces the periplasmic side of the membrane. Although current functional models for the cytochrome bcl complex predict that the Rieske **iron**-sulfur center interacts with cytochrome c1 in the periplasm, the **iron**-sulfur protein resisted proteolytic attack in the liposome-chromatophore fusion products under conditions that caused extensive degradation of cytochrome c1. Two cleavage products of the **iron**-sulfur protein were observed after the digestion of chromatophores, suggesting both a heterogeneity in the population of this protein and the. . .
- IT Miscellaneous Descriptors

- PROTEINASE K PERIPLASMIC MEMBRANE ENZYMATIC METHOD
- RN 7439-89-6 (**IRON**)  
7704-34-9 (**SULFUR**)  
9035-42-1 (**CYTOCHROME C-1**)  
39450-01-6 (**PROTEINASE K**)
- L3 ANSWER 11 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
TI LIPOXYGENASE ISOENZYMES A SPECTROSCOPIC AND STRUCTURAL CHARACTERIZATION OF  
SOYBEAN SEED **ENZYMES**.
- AB. . . a detailed physical and structural characterization. Four seed  
isoenzymes from two soybean cultivars have been studied by peptide  
mapping, free **thiol** and **iron** content  
**determinations**, and C-terminal analysis as well as by uv-visible  
absorption and EPR spectroscopy. While differences between the type 1  
**enzyme** and the other isoenzymes were readily detected using  
proteolytic peptide mapping, digestion with dilute hydrochloric acid and  
C-terminal analysis both. . . native isoenzyme was consistent with  
expectations for the experimental aromatic amino acid content. All of the  
isoenzymes contained one non-heme **iron** atom per molecule of  
protein. The oxidation of each isoenzyme with product hydroperoxide  
resulted in the conversion of the **iron** from an EPR silent state  
into several forms with EPR signals characteristic of high spin  
**iron(III)**. The EPR spectra of all isoenzymes were remarkably  
similar. A time course EPR and catalytic activity study revealed that the  
various EPR active states represent a complex equilibrium between  
**iron** atoms in different environments. The pH dependence for the  
EPR and absorption spectroscopy lends support to the hypothesis that  
acid/base. . .
- L3 ANSWER 12 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
AB Redox titrations of the fructose-specific carrier protein, **\*\*GRAPHIC\*\***.  
in Rhodopseudomonas sphaeroides show that only the reduced form of the  
**enzyme** is active. The oxidized form of the **enzyme** can  
still be phosphorylated but is unable to transfer the phosphoryl group to  
fructose. The redox properties of the **enzyme** change upon  
phosphorylation. The reduction rate of **\*\*GRAPHIC\*\*** is slower than that  
of **\*\*GRAPHIC\*\*** whereas the opposite is true for. . . the redox centre  
is more negative on **\*\*GRAPHIC\*\*** than **\*\*GRAPHIC\*\*** most likely due to an  
upwards pK shift of the **thiols** upon phosphorylation. The  
**measurements** indicate that the phosphotransferase system is  
regulated by the redox potential in a way that is dependent on the  
substrate. . .
- IT Miscellaneous Descriptors  
ELECTRON TRANSPORT **ZINC**
- RN 73-89-2 (**PHOSPHOENOLPYRUVATE**)  
7440-66-6 (**ZINC**)  
9031-09-8 (**PHOSPHOTRANSFERASE**)  
57-48-7Q, 30237-26-4Q (**FRUCTOSE**)
- L3 ANSWER 13 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
TI MURINE CYTOTOXIC ACTIVATED MACROPHAGES INHIBIT ACONITASE IN TUMOR CELLS  
INHIBITION INVOLVES THE **IRON-SULFUR** PROSTHETIC GROUP AND IS  
REVERSIBLE.
- AB. . . Previous studies show that cytotoxic activated macrophages cause  
inhibition of DNA synthesis, inhibition of mitochondrial respiration, and  
loss of intracellular **iron** from tumor cells. Here we examine  
aconitase, a citric acid cycle **enzyme** with a catalytically  
active **iron-sulfur** cluster, to **determine** if  
**iron-sulfur** clusters are targets for activated macrophage-induced  
**iron** removal. Results show that aconitase activity declines  
dramatically in target cells after 4 h of co-cultivation with activated  
macrophages. Aconitase. . . ferrous ion plus a reducing agent causes  
near-complete reconstitution of aconitase activity. The results show that

removal of a labile **iron** atom from the [4Fe-4S]cluster, by a cytotoxic activated macrophage-mediated mechanism, is causally related to aconitase inhibition.

=> s l2 and (homocysteine)

7988 HOMOCYSTEINE

10 HOMOCYSTEINES

7992 HOMOCYSTEINE

(HOMOCYSTEINE OR HOMOCYSTEINES)

L4 0 L2 AND (HOMOCYSTEINE)

=> s l2 and (pyridylazo or nitrosoaminophenol or nitroso?)

257 PYRIDYLAZO

1 NITROSOAMINOPHENOL

30356 NITROSO?

L5 5 L2 AND (PYRIDYLAZO OR NITROSOAMINOPHENOL OR NITROSO?)

=> d l5 kwic 1-5

L5 ANSWER 1 OF 5 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
TI Characterization of cytochrome P450 2E1 activity by the (14C)

**nitrosodimethylamine** breath test.

AB The objective of this study was to measure the rate of demethylation of **nitrosodimethylamine** in vivo in the rat and determine its value to assess CYP2E1 activity in intact animals. **Nitrosodimethylamine** labeled with 14C on both methyl groups was administered to rats and exhaled 14CO2 was collected during 2-3 h. The **nitrosodimethylamine** breath test was increased by inducers of CYP2E1, such as ethanol (+139%) and 4-methylpyrazole (+115%). and decreased by the inhibitor diallyl sulfide (-53%). In addition, the **nitrosodimethylamine** breath test was not changed significantly by inducers specific for other cytochrome P450 such as beta-naphthoflavone, dexamethasone, and phenobarbital. The specificity of the induction by 4-methylpyrazole and of the inhibition by diallyl **sulfide** for CYP2E1 was **determined** using the (14C)caffeine (CYP1A2), (14C)aminopyrine (CYP2C11), and (14C)erythromycin (CYP3A2) breath tests. 4-Methylpyrazole treatment caused a small increase of the caffeine. . . of the aminopyrine breath test (-13%) but a 23% increase of the erythromycin breath test. It is concluded that the (14C)**nitrosodimethylamine** breath test is useful to assess CYP2E1 activity in vivo in the rat.

IT Methods & Equipment

[carbon-13]**nitrosodimethylamine** breath test: analytical method, catalytical activity evaluation method, **enzymatic** method, physiological method

L5 ANSWER 2 OF 5 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN

TI A method to study kinetics of transnitrosation with

**nitrosoglutathione**: Reactions with hemoglobin and other thiols.

AB The rate of protein S-nitrosylation, a reversible process by which S-**nitroso** thiol (RS-NO) com. pounds exchange the NO+ moiety with protein SH groups, is essentially governed by two factors, the pKa. . . formation (RSH + GS-NO  $\rightleftharpoons$  RS-NO + GSH) can be monitored by spectrophotometry at 340 nm in terms of the **enzymatic** conversion of GSH to a GS conjugate. Unlike methods based on NO release from the S-NO bond, this procedure is. . . of thiols. The second order rate constants of S-nitrosylation of human and rat oxy- and deoxyhemoglobin of BSA and other **thiols** were **calculated** by this method which confirmed previous results reported in the literature.

IT Major Concepts

Biochemistry and Molecular Biophysics; Methods and Techniques

IT Chemicals & Biochemicals

hemoglobin: transnitrosation kinetics; **nitrosoglutathione**:

nitrosylating agent; proteins: transnitrosation kinetics; thiols:  
transnitrosation kinetics

L5 ANSWER 3 OF 5 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
AB. . . study investigates the effects of thiol-depleting/modifying agents  
on the activity of and tolerance to nitroglycerin (GTN), sodium  
nitroprusside (SNP) and S-nitroso-Nacetylpenicillamine (SNAP) in  
an in vivo rat model. Rats were treated with either vehicle (control), GTN  
(before and after induction of. . . SNP and SNAP on vascular cyclic GMP  
levels were investigated before and after each treatment. In addition,  
plasma and tissue **thiol** concentrations were **measured**  
in the same tissues as used for the determination of cyclic GMP in aorta  
and inferior vena cava after single. . . action and tolerance. Here we  
propose that SNAP may act either directly by nitrosation of the heme  
moiety of the **enzyme** or via an S-**enzyme**-S-drug  
transnitrosation reaction, whereas GTN and SNP actions are mediated by the  
formation of S-nitrosothiol on the **enzyme** itself,  
rather than by activation of the **enzyme** by free S-  
nitrosothiols.

L5 ANSWER 4 OF 5 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
AB. . . this report, we demonstrated that the Yersinia protein tyrosine  
phosphatase (PTPase) could be inactivated by the alkylating agent  
iodoacetate. The **enzyme** modification was selective, and the  
covalent attachment was stoichiometric. The residue that was labeled by  
iodoacetate was shown to be. . . ionic strength of the media increased.  
There was no significant D-20 solvent isotope effect associated with the  
inactivation of the **enzyme**, suggesting that thiol anion of  
Cys403 reacted as a nucleophile. The Yersinia PTPase also displayed  
differential reactivity (940-fold) toward iodoacetate over iodoacetamide.  
This indicates that residues within the active site of the **enzyme**  
are positively charged. The pK-a of the active site **thiol** group  
was **determined** to be 4.67. The low pK-a value suggests that  
ionic interactions are important in stabilizing the thiolate anion. One  
candidate. . . thiol in the mutants also showed enhanced reactivity  
toward iodoacetate. The second-order rate constants for the inactivation  
of the wild-type **enzyme**, H402N, and H402A were 59.7, 3305, and  
1763 M<sup>-1</sup> min<sup>-1</sup>, respectively.

ORGN Super Taxa  
Enterobacteriaceae: Eubacteria, Bacteria; Nitrobacteraceae: Eubacteria,  
Bacteria  
ORGN Organism Name  
Enterobacteriaceae (Enterobacteriaceae); **Nitrosomonas**  
(Nitrobacteraceae)  
ORGN Organism Superterms  
bacteria; eubacteria; microorganisms

L5 ANSWER 5 OF 5 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
TI DIFFERENTIAL EFFECTS OF THIOLS ON DNA MODIFICATIONS VIA ALKYLATION AND  
MICHAEL ADDITION BY ALPHA ACETOXY-N-NITROSOPYRROLIDINE.  
AB The hepatocarcinogen NPYR is metabolically activated by  
.alpha.-hydroxylation mediated by cytochrome P-450 **enzymes** to  
yield a 4-oxobutylating agent and 2-butenal (crotonaldehyde). Both are  
reactive intermediates capable of modifying DNA with guanine either by. .  
. formation of adduct 2, although both adducts are presumably derived  
from the 4-oxobutylating agent. The reaction rates of thiols with  
**crotonaldehyde** were determined to **be** in following order:  
means > Glu > Nac. These results indicate that the differential effects of  
thiols on DNA modification. . .

=> s 11 and (pyridylazo or nitrosoaminophenol or nitroso?)  
257 PYRIDYLAZO

1 NITROSOAMINOPHENOL  
30356 NITROSO?

L6 13 L1 AND (PYRIDYLAZO OR NITROSOAMINOPHENOL OR NITROSO?)

=> d 16 kwic 1-13

L6 ANSWER 1 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
TI Plasma cysteine deficiency and decreased reduction of  
**nitrososulfamethoxazole** with HIV infection.  
AB. . . deficiency and whether this is associated with decreased  
detoxification of the toxic metabolites of sulfamethoxazole. Reduced,  
oxidized, protein-bound, and total **thiol** levels were  
**measured** in 33 HIV-positive patients and 33 control subjects by an  
HPLC method utilizing the fluorescent probe bromobimane. The reduction of  
sulfamethoxazole hydroxylamine and **nitrososulfamethoxazole** by  
plasma and the plasma redox balance in the presence of  
**nitrososulphamethoxazole** were also determined by HPLC. Reduced  
plasma cysteine was significantly ( $p < 0.0001$ ) lower in HIV-positive  
patients ( $13.0 \pm 3.0$  . . . were lower in HIV-positive patients. Reduced  
homocysteine was elevated in patients. Plasma from HIV-positive patients  
was less able to detoxify **nitrososulfamethoxazole** than control  
plasma. These findings show that the disturbance in redox balance in  
HIV-positive patients may alter metabolic detoxification capacity, . . .

L6 ANSWER 2 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
TI Glutathione modulation changes the penetration of N-(3H)methyl-N-nitro-N-  
**nitrosoguanidine** into gastric mucosa of rats.  
AB. . . the glutathione level is elevated in some forms of gastritis. We  
studied the relevance of glutathione for the penetration of  
N-methyl-N-nitro-N-**nitrosoguanidine** in the glandular mucosa of  
the stomach. Male Wistar rats were treated with glutathione (0.5 mmol/kg  
intravenously), N-acetylcysteine (0.5 mmol/kg intravenously), or  
L-buthionine-(S,R)-sulfoximine (BSO, 2 mmol/kg intraperitoneally), before  
the gastric mucosa was exposed to N-(3H)methyl-N-nitro-N-  
**nitrosoguanidine** for 10 min. Penetration of the carcinogen was  
evaluated by light microscopic identification of cells labeled with  
bromodeoxyuridine and N-(3H)methyl-N-nitro-N-**nitrosoguanidine**  
(double-labeled cells). **Thiol** substances were **quantified**  
by reversed-phase ion-pair liquid chromatography and fluorescence  
detection. The percentage double-labeled cells was higher in antrum mucosa  
( $11.7 \pm 3.1\%$ ) . . . = 0.002), and the amount of reduced glutathione ( $r$   
= 0.449,  $P = 0.002$ ). Glutathione modulation effects the penetration of  
N-(3H)methyl-N-nitro-N-**nitrosoguanidine** in the antrum but not in  
the corpus mucosa. Thiols do not explain the different penetration of  
carcinogen in antrum. . .

IT . . .

Organisms

antrum mucosa: digestive system; gastric mucosa: digestive system

IT Diseases

gastritis: digestive system disease

IT Chemicals & Biochemicals

N-tritiated hydrogen-methyl-N-nitro-N-**nitrosoguanidine**:

carcinogen, penetration; glutathione: modulation, mucosal protection

IT Alternate Indexing

Gastritis (MeSH)

L6 ANSWER 3 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
TI Investigations of S-transnitrosylation reactions between low- and  
high-molecular-weight S-**nitroso** compounds and their thiols by  
high-performance liquid chromatography and gas chromatography-mass  
spectrometry.

AB. . . nitric oxide-related biological activities are regulated in vivo.  
Mechanisms of S-transnitrosylation reactions are poorly understood and

equilibria constants for physiological S-**nitroso** compounds and thiols are rare. In the present study we investigated S-transnitrosylation reactions of the thiols homocysteine, cysteine, glutathione, N-acetylcysteine, N-acetylpenicillamine, and human plasma albumin and their corresponding S-**nitroso** compounds SNhC, SNC, GSNO, SNAC, SNAP, and SNALB utilizing high-performance liquid chromatographic and gas chromatographic-mass spectrometric techniques. These methods allowed to study S-transnitrosylation reactions in mixtures of several S-**nitroso** compound/thiol pairs, to **determine** equilibria constants, and to elucidate the mechanism of S-transnitrosylation reactions. We obtained the following order for the equilibria constants in. . . SNAC > GSNO approx SNALB > SNAP > SNC. Our results suggest that the mechanism of S-transnitrosylation reactions of these S-**nitroso** compounds and their thiols involve heterolytic cleavage of the S-N bond. Incubation of SNC with human red blood cells resulted. . .

IT . . .

#### Systems of Organisms

red blood cells: blood and lymphatics

IT Chemicals & Biochemicals

amino acids: quantitative analysis; thiols: quantitative analysis; S-**nitroso** compounds: molecular weights, quantitative analysis

L6 ANSWER 4 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN

TI Ratio of S-**nitrosohomocyst(e)ine** to homocyst(e)ine or other

**thiols determines** neurotoxicity in rat cerebrocortical cultures.

AB. . . of many proteins can be regulated by S-nitrosylation or reaction of nitric oxide (NO)-related species with cysteine residues to produce S-**nitroso**proteins (S-**nitroso**thiols). However, S-**nitroso**thiols, such as S-**nitrosocysteine** (SNOC) and S-**nitrosohomocysteine** (SNHC), can also be neurotoxic by generating NO which reacts with endogenous O<sub>2</sub>- to form peroxynitrite. Additionally, thiols such as. . . acute exposure to micromolar SNHC that is normally neurotoxic. This finding can be best explained by the fact that although S-**nitroso**thiols undergo homolytic cleavage to produce NO and subsequent neurotoxicity, adding thiol stabilizes S-**nitroso**thiols, effectively preventing this cleavage. Thus, the equilibrium between **thiol** and **nitrosothiol determines** outcome in studies of neuronal degeneration.

IT . . .

#### Systems of Organisms

cerebrocortical cells: nervous system

IT Diseases

neuronal degeneration

IT Chemicals & Biochemicals

homocysteine: neurotoxin; nitric oxide; N-methyl-D-aspartate; S-**nitrosocysteine**: neurotoxin; S-**nitrosohomocysteine**: neurotoxin

RN 454-29-5Q (HOMOCYST(E)INE)  
6027-13-0Q (HOMOCYST(E)INE)  
51209-75-7 (S-**NITROSOCYSTEINE**)  
10102-43-9 (NITRIC OXIDE)  
6384-92-5 (N-METHYL-D-ASPARTATE)

L6 ANSWER 5 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN

TI Characterization of cytochrome P450 2E1 activity by the (14C)

**nitrosodimethylamine** breath test.

AB The objective of this study was to measure the rate of demethylation of **nitrosodimethylamine** in vivo in the rat and determine its value to assess CYP2E1 activity in intact animals. **Nitrosodimethylamine** labeled with 14C on both methyl groups was administered to rats and exhaled 14CO<sub>2</sub> was collected during 2-3 h. The **nitrosodimethylamine**

breath test was increased by inducers of CYP2E1, such as ethanol (+139%) and 4-methylpyrazole (+115%). and decreased by the inhibitor diallyl sulfide (-53%). In addition, the **nitrosodimethylamine** breath test was not changed significantly by inducers specific for other cytochrome P450 such as beta-naphthoflavone, dexamethasone, and phenobarbital. The specificity of the induction by 4-methylpyrazole and of the inhibition by diallyl sulfide for CYP2E1 was **determined** using the (14C)caffeine (CYP1A2), (14C)aminopyrine (CYP2C11), and (14C)erythromycin (CYP3A2) breath tests. 4-Methylpyrazole treatment caused a small increase of the caffeine. . . of the aminopyrine breath test (-13%) but a 23% increase of the erythromycin breath test. It is concluded that the (14C)**nitrosodimethylamine** breath test is useful to assess CYP2E1 activity in vivo in the rat.

IT Methods & Equipment

[carbon-13]**nitrosodimethylamine** breath test: analytical method, catalytical activity evaluation method, enzymatic method, physiological method

L6 ANSWER 6 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN

AB While **nitrosothiol** compounds have been hypothesized to be important in the transport and function of nitric oxide (NO) in biological systems many. . . view of these fundamental questions there has been a great need for simple, sensitive, and specific methods for quantitation of **nitrosothiols** in biological samples. We report the development of two methods, for the measurement of **nitrosothiol** compounds using a chemiluminescence nitric oxide analyzer with a standard purging vessel. The first method is based on treatment with. . . iodide in the presence or absence of dissolved free iodine. Quantitative release of NO occurs either from both nitrite and **nitrosothiols** or from nitrite alone, respectively. Subtraction of the amount of NO released without iodine from NO released in the presence of iodine allows estimation of the **nitrosothiol** concentration. To selectively measure **nitrosothiols**, we developed a redox quinone-hydroquinone alkaline reactant that selectively releases NO from **nitrosothiols**. This reactant quantitatively converts **nitrosothiols** to NO at elevated temperature, >60degreeC. Both methods were shown to detect **nitrosothiols** in biological buffers or blood plasma down to 10 nM concentration with high accuracy and reproducibility, variability less than 5%.. . .

IT Major Concepts

Biochemistry and Molecular Biophysics; Methods and Techniques

IT Chemicals & Biochemicals

nitric oxide; nitrite; nitrosylated **thiols**: assay, chemiluminescence **measurement**, quantitation; potassium iodide: Kodak

L6 ANSWER 7 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN

TI Nitric oxide donation and nitrite assays in the presence of **thiols** and albumin as **determined** by Griess' and Werringloer's methods.

AB. . . were used as a source of NO2-. This happened probably because at low Ph of the reaction mixture the corresponding **nitrosothiols** were formed and thus NO2 was not accessible for detection. However, this phenomenon was not seen when instead of SIN-1 another NO donor - S-**nitroso**-N-acetylpenicillamine (SNAP) was used. SNAP is a **nitrosothiol** itself and physiological low molecular thiols (e.g. GSH or cysteine) displaced NO from SNAP. An increase in the amount of. . .

IT

. . . sodium nitrite; thiols: low-molecular weight; D,L-alanine: amino acid; D,L-arginine: amino acid; D,L-serine: amino acid; L-tyrosine: amino acid; N-acetylcysteine: amino acid; S-**nitroso**-N-acetylpenicillamine: nitric oxide donor; 3-morpholinopropanesulfonamide [SIN-1]: nitric oxide donor



- RN 10102-43-9 (NITRIC OXIDE)  
 14797-65-0 (NITRITE)  
 33876-97-0 (SIN-1)  
 7632-00-0 (SODIUM NITRITE)  
 56-41-7 (L-ALANINE)  
 616-91-1 (N-ACETYLCYSTEINE)  
 74-79-3 (L-ARGININE)  
 56-45-1 (L-SERINE)  
 79032-48-7 (S-NITROSO-N-ACETYL PENICILLAMINE)
- L6 ANSWER 8 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
 TI A method to study kinetics of transnitrosation with  
**nitrosogluthione**: Reactions with hemoglobin and other thiols.  
 AB The rate of protein S-nitrosylation, a reversible process by which S-  
**nitroso** thiol (RS-NO) com. pounds exchange the NO+ moiety with  
 protein SH groups, is essentially governed by two factors, the pKa. . .  
 of thiols. The second order rate constants of S-nitrosylation of human and  
 rat oxy- and deoxyhemoglobin of BSA and other **thiols** were  
**calculated** by this method which confirmed previous results  
 reported in the literature.
- IT Major Concepts  
 Biochemistry and Molecular Biophysics; Methods and Techniques  
 IT Chemicals & Biochemicals  
 hemoglobin: transnitrosation kinetics; **nitrosogluthione**:  
 nitrosylating agent; proteins: transnitrosation kinetics; thiols:  
 transnitrosation kinetics
- L6 ANSWER 9 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
 TI S-transnitrosation reactions involving plasma membrane **thiol**  
 groups are mechanistic **determinants** of the biological effects of  
**S-nitrosothiols**.  
 IT . . .  
 and Circulation)  
 IT Parts, Structures, & Systems of Organisms  
 aorta: circulatory system; plasma membrane  
 IT Chemicals & Biochemicals  
 cyclic GMP; S-**nitrosothiol**  
 IT Miscellaneous Descriptors  
 Meeting Abstract; S-**nitrosothiol**-dependent vasorelaxation;  
 S-transnitrosation reaction
- L6 ANSWER 10 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
 TI Balance between **thiol** and S-**nitrosothiol**  
**determines** neurotoxicity in cortical cultures.  
 IT Miscellaneous Descriptors  
 CORTICAL CELL CULTURE; CYSTEINE; HOMOCYSTEINE; MEETING ABSTRACT;  
 MEETING POSTER; NERVOUS SYSTEM; NEURONAL DEGENERATION; NEUROPROTECTIVE  
 EFFECT; S-**NITROSOTHIOL**; THIOL
- L6 ANSWER 11 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
 AB. . . study investigates the effects of thiol-depleting/modifying agents  
 on the activity of and tolerance to nitroglycerin (GTN), sodium  
 nitroprusside (SNP) and S-**nitroso**-N-acetylpenicillamine (SNAP) in  
 an in vivo rat model. Rats were treated with either vehicle (control), GTN  
 (before and after induction of. . . SNP and SNAP on vascular cyclic GMP  
 levels were investigated before and after each treatment. In addition,  
 plasma and tissue **thiol** concentrations were **measured**  
 in the same tissues as used for the determination of cyclic GMP in aorta  
 and inferior vena cava after single. . . of the enzyme or via an  
 S-enzyme-S-drug transnitrosation reaction, whereas GTN and SNP actions are  
 mediated by the formation of S-**nitrosothiol** on the enzyme  
 itself, rather than by activation of the enzyme by free S-  
**nitrosothiols**.

L6 ANSWER 12 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
AB. . . This indicates that residues within the active site of the enzyme  
are positively charged. The pK-a of the active site **thiol** group  
was **determined** to be 4.67. The low pK-a value suggests that  
ionic interactions are important in stabilizing the thiolate anion. One  
candidate. . .

ORGN Super Taxa

Enterobacteriaceae: Eubacteria, Bacteria; Nitrobacteraceae: Eubacteria,  
Bacteria

ORGN Organism Name

Enterobacteriaceae (Enterobacteriaceae); **Nitrosomonas**  
(Nitrobacteraceae)

ORGN Organism Superterms

bacteria; eubacteria; microorganisms

L6 ANSWER 13 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN  
TI DIFFERENTIAL EFFECTS OF THIOLS ON DNA MODIFICATIONS VIA ALKYLATION AND  
MICHAEL ADDITION BY ALPHA ACETOXY-N-**NITROSOPYRROLIDINE**.

AB. . . formation of adduct 2, although both adducts are presumably derived  
from the 4-oxobutylating agent. The reaction rates of thiols with  
**crotonaldehyde** were determined to **be** in following order:  
means > Glu > Nac. These results indicate that the differential effects of  
thiols on DNA modification. . .

=> file caplus

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SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

86.78

86.99

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FILE COVERS 1907 - 11 Oct 2003 VOL 139 ISS 16

FILE LAST UPDATED: 10 Oct 2003 (20031010/ED)

This file contains CAS Registry Numbers for easy and accurate  
substance identification.

=> s 11 and (pyridylazo or nitrosoaminophenol or nitroso?)

288676 SULFIDE

80379 SULFIDES

319078 SULFIDE

(SULFIDE OR SULFIDES)

45627 THIOL

31182 THIOLS

63319 THIOL

(THIOL OR THIOLS)

314681 SULFUR  
     467 SULFURS  
 314900 SULFUR  
     (SULFUR OR SULFURS)  
 749297 DETERMIN?  
 547800 DET  
     33690 DETS  
 578865 DET  
     (DET OR DETS)  
 1853273 DETD  
     300974 DETG  
 1424104 DETN  
     127204 DETNS  
 1498281 DETN  
     (DETN OR DETNS)  
 3691412 DETERMIN?  
     (DETERMIN? OR DET OR DETD OR DETG OR DETN)  
 103191 QUANTIF?  
 159753 CALCULAT?  
 120595 CALC  
     5801 CALCS  
 125820 CALC  
     (CALC OR CALCS)  
 796059 CALCD  
     11 CALCDS  
 796065 CALCD  
     (CALCD OR CALCDS)  
 79289 CALCG  
     1 CALCGS  
 79289 CALCG  
     (CALCG OR CALCGS)  
 403290 CALCN  
 432013 CALCNS  
 735245 CALCN  
     (CALCN OR CALCNS)  
 1487568 CALCULAT?  
     (CALCULAT? OR CALC OR CALCD OR CALCG OR CALCN)  
 2332536 MEASURE?  
     27178 (SULFIDE OR THIOL OR SULFUR) (3W) (DETERMIN? OR QUANTIF? OR  
         CALCULAT? OR MEASURE?)  
         4019 PYRIDYLAZO  
             1 PYRIDYLAZOS  
         4019 PYRIDYLAZO  
             (PYRIDYLAZO OR PYRIDYLAZOS)  
             10 NITROSOAMINOPHENOL  
                 1 NITROSOAMINOPHENOLS  
             10 NITROSOAMINOPHENOL  
                 (NITROSOAMINOPHENOL OR NITROSOAMINOPHENOLS)  
     55417 NITROSO?  
 L7       84 L1 AND (PYRIDYLAZO OR NITROSOAMINOPHENOL OR NITROSO?)  
  
 => s 17 and (enzyme or enzymatic or lyase)  
     686710 ENZYME  
     395722 ENZYMES  
     864120 ENZYME  
         (ENZYME OR ENZYMES)  
         8178 ENZYMATIC  
             1 ENZYMATICS  
         8179 ENZYMATIC  
             (ENZYMATIC OR ENZYMATICS)  
     14547 LYASE  
         2286 LYASES  
     15556 LYASE

(LYASE OR LYASES)  
2 L7 AND (ENZYME OR ENZYMATIC OR LYASE)

L8

=> d 18 kwic 1-2

L8 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2003 ACS on STN

AB . . . study investigates the effects of thiol-depleting/modifying agents on the activity of and tolerance of nitroglycerin (GTN), sodium nitroprusside (SNP) and S-nitroso-N-acetylpenicillamine (SNAP) in an in vivo rat model. Rats were treated with either vehicle (control), GTN (before and after induction of. . . GTN, SNP and SNAP on vascular cGMP levels were investigated before and after each treatment. In addn., plasma and tissue **thiol** concns. were **measured** in the same tissues as used for the detn. of cGMP in aorta and inferior vena cava after single and. . . action and tolerance. Here we propose that SNAP may act either directly by nitrosation of the heme moiety of the **enzyme** or via an S-**enzyme**-S-drug transnitrosation reaction, whereas GTN and SNP actions are mediated by the formation of S-nitrosothiol on the **enzyme** itself, rather than by activation of the **enzyme** by free S-nitrosothiols.

IT 79032-48-7, S-Nitroso-N-acetylpenicillamine

RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(effects of thiol-depleting/modifying agents on the activity of and tolerance of nitroglycerin , sodium nitroprusside and S-nitroso -N-acetylpenicillamine)

L8 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2003 ACS on STN

TI Differential effects of thiols on DNA modifications via alkylation and Michael addition by .alpha.-acetoxy-N-nitrosopyrrolidine

AB The hepatocarcinogen N-nitrosopyrrolidine (NPYR) is metabolically activated by .alpha.-hydroxylation mediated by cytochrome P 450 **enzymes** to yield a 4-oxobutylating agent and 2-butenal (crotonaldehyde). Both are reactive intermediates capable of modifying DNA with guanine either by. . . inhibit the formation of adduct 2, although both adducts are presumably derived from the 4-oxobutylating agent. The reaction rates of **thiols** with crotonaldehyde were **detd.** to be in the following order: mesna > Glu > Nac. These results indicate that the differential effects of thiols. . .

=> s 17 and (homocysteine)

8062 HOMOCYSTEINE

50 HOMOCYSTEINES

8078 HOMOCYSTEINE

(HOMOCYSTEINE OR HOMOCYSTEINES)

L9 7 L7 AND (HOMOCYSTEINE)

=> d 19 kwic 1-7

L9 ANSWER 1 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN

TI Plasma cysteine deficiency and decreased reduction of nitrososulfamethoxazole with HIV infection

AB . . . deficiency and whether this is assocd. with decreased detoxification of the toxic metabolites of sulfamethoxazole. Reduced, oxidized, protein-bound, and total **thiol** levels were **measured** in 33 HIV-pos. patients and 33 control subjects by an HPLC method utilizing the fluorescent probe bromobimane. The redn. of sulfamethoxazole hydroxylamine and nitrososulfamethoxazole by plasma and the plasma redox balance in the presence of nitrososulfamethoxazole were also detd. by HPLC. Reduced plasma cysteine was significantly (p < 0.0001) lower in HIV-pos. patients (13.0

.+- 3.0. . . Although there was no difference in oxidized, protein-bound, and total cysteine, the thiol/disulfide ratios were lower in HIV-pos. patients. Reduced **homocysteine** was elevated in patients. Plasma from HIV-pos. patients was less able to detoxify **nitrososulfamethoxazole** than control plasma. These findings show that the disturbance in redox balance in HIV-pos. patients may alter metabolic detoxification capacity, . . .

ST **nitrososulfamethoxazole** redn HIV infection blood cysteine deficiency; sulfamethoxazole hypersensitivity AIDS plasma cysteine deficiency

IT Thiols (organic), biological studies  
 RL: BOC (Biological occurrence); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence); PROC (Process)  
 (-disulfides ratio; plasma cysteine deficiency and decreased redn. of **nitrososulfamethoxazole** with HIV infection)

IT Disulfides  
 RL: BOC (Biological occurrence); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence); PROC (Process)  
 (-thiols ratio; plasma cysteine deficiency and decreased redn. of **nitrososulfamethoxazole** with HIV infection)

IT Proteins, general, biological studies  
 RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)  
 (blood; plasma cysteine deficiency and decreased redn. of **nitrososulfamethoxazole** with HIV infection)

IT AIDS (disease)  
 Human immunodeficiency virus 1  
 (plasma cysteine deficiency and decreased redn. of **nitrososulfamethoxazole** with HIV infection)

IT 114438-33-4, Sulfamethoxazole hydroxylamine 131549-85-4  
 RL: ADV (Adverse effect, including toxicity); BPR (Biological process); BSU (Biological study, unclassified); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative); PROC (Process)  
 (plasma cysteine deficiency and decreased redn. of **nitrososulfamethoxazole** with HIV infection)

IT 723-46-6, Sulfamethoxazole  
 RL: ADV (Adverse effect, including toxicity); BPR (Biological process); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)  
 (plasma cysteine deficiency and decreased redn. of **nitrososulfamethoxazole** with HIV infection)

IT 52-90-4, Cysteine, biological studies 6027-13-0, **Homocysteine**  
 RL: BOC (Biological occurrence); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence); PROC (Process)  
 (plasma cysteine deficiency and decreased redn. of **nitrososulfamethoxazole** with HIV infection)

L9 ANSWER 2 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN

AB . . . embodiments the chromophore is detectable with the naked eye. In another aspect of preferred embodiments the thiol-specific reagent comprises a **nitroso**-donor, and more preferably Na-nitroprusside. In yet another aspect of preferred embodiments, the solvent insol. compd. comprises a basic or acidic. . . Al-hydroxide. These compns. and methods are more sensitive and reliable method than that previously available, esp. for the detn. of **homocysteine**.

ST **thiol detn** reagent; disulfide detn reagent

IT Chromophores  
 (reagents for **thiols** and disulfides **detn.** by formation of colored solid state complex)

IT Disulfides

- Thiols (organic), analysis  
 RL: ANT (Analyte); ANST (Analytical study)  
 (reagents for **thiols** and disulfides **detn.** by  
 formation of colored solid state complex)
- IT Reagents  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (reagents for **thiols** and disulfides **detn.** by  
 formation of colored solid state complex)
- IT 7732-18-5, Water, analysis  
 RL: AMX (Analytical matrix); ANST (Analytical study)  
 (reagents for **thiols** and disulfides **detn.** by  
 formation of colored solid state complex)
- IT 454-29-5, **Homocysteine** 462-10-2, Homocystine 923-32-0,  
 Cystine 3374-22-9, Cysteine  
 RL: ANT (Analyte); ANST (Analytical study)  
 (reagents for **thiols** and disulfides **detn.** by  
 formation of colored solid state complex)
- IT 68-04-2, Trisodium citrate 139-12-8, Aluminum acetate 557-34-6, Zinc  
 acetate 1310-73-2, Sodium hydroxide (NaOH), uses 5961-85-3,  
 Tris(2-carboxyethyl)phosphine 7631-86-9, Silica, uses 7786-81-4,  
 Nickel sulfate (NiSO<sub>4</sub>) 10108-64-2, Cadmium chloride (CdCl<sub>2</sub>)  
 12054-48-7, Nickel hydroxide 14402-89-2, Sodium nitroprusside  
 20427-58-1, Zinc hydroxide 21645-51-2, Aluminum hydroxide, uses  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (reagents for **thiols** and disulfides **detn.** by  
 formation of colored solid state complex)
- IT 60-00-4, EDTA, analysis  
 RL: ARU (Analytical role, unclassified); ANST (Analytical study)  
 (reagents for **thiols** and disulfides **detn.** by  
 formation of colored solid state complex)
- L9 ANSWER 3 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN
- TI Investigations of S-Transnitrosylation Reactions between Low- and  
 High-Molecular-Weight S-**Nitroso** Compounds and Their Thiols by  
 High-Performance Liquid Chromatography and Gas Chromatography-Mass  
 Spectrometry
- AB . . . nitric oxide-related biol. activities are regulated in vivo.  
 Mechanisms of S-transnitrosylation reactions are poorly understood and  
 equil. consts. for physiol. S-**nitroso** compds. and thiols are  
 rare. In the present study we investigated S-transnitrosylation reactions  
 of the thiols **homocysteine**, cysteine, glutathione,  
 N-acetylcysteine, N-acetylpenicillamine, and human plasma albumin and  
 their corresponding S-**nitroso** compds. SNhC, SNC, GSNO, SNAC,  
 SNAP, and SNALB utilizing high-performance liq. chromatog. and gas  
 chromatog.-mass spectrometric techniques. These methods allowed to study  
 S-transnitrosylation reactions in mixts. of several S-**nitroso**  
 compd./**thiol** pairs, to **det.** equil. consts., and to  
 elucidate the mechanism of S-transnitrosylation reactions. We obtained  
 the following order for the equil. consts. in. . . SNAC > GSNO  
 .apprxeq. SNALB > SNAP > SNC. Our results suggest that the mechanism of  
 S-transnitrosylation reactions of these S-**nitroso** compds. and  
 their thiols involve heterolytic cleavage of the S-N bond. Incubation of  
 SNC with human red blood cells resulted. . .
- IT Equilibrium constant  
 Erythrocyte  
 HPLC  
 Nitrosation  
 (S-transnitrosylation reactions between low- and high-mol.-wt. S-  
**nitroso** compds. and thiols by high-performance liq. chromatog.  
 and gas chromatog.-mass spectrometry)
- IT **Nitroso** compounds  
 RL: ANT (Analyte); SPN (Synthetic preparation); ANST (Analytical study);  
 PREP (Preparation)

- (S-transnitrosylation reactions between low- and high-mol.-wt. S-**nitroso** compds. and thiols by high-performance liq. chromatog. and gas chromatog.-mass spectrometry)
- IT Thiols (organic), reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (S-transnitrosylation reactions between low- and high-mol.-wt. S-**nitroso** compds. and thiols by high-performance liq. chromatog. and gas chromatog.-mass spectrometry)
- IT Mass spectrometry  
 Mass spectrometry  
 (gas chromatog. combined with; S-transnitrosylation reactions between low- and high-mol.-wt. S-**nitroso** compds. and thiols by high-performance liq. chromatog. and gas chromatog.-mass spectrometry)
- IT Gas chromatography  
 Gas chromatography  
 (mass spectrometry combined with; S-transnitrosylation reactions between low- and high-mol.-wt. S-**nitroso** compds. and thiols by high-performance liq. chromatog. and gas chromatog.-mass spectrometry)
- IT Albumins, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (serum; S-transnitrosylation reactions between low- and high-mol.-wt. S-**nitroso** compds. and thiols by high-performance liq. chromatog. and gas chromatog.-mass spectrometry)
- IT 52-90-4, L-Cysteine, reactions 70-18-8, Glutathione, reactions 616-91-1, N-Acetylcysteine 6027-13-0, L-**Homocysteine** 14797-55-8, Nitrate, reactions 14797-65-0, Nitrite, reactions 15537-71-0, N-Acetylpenicillamine  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (S-transnitrosylation reactions between low- and high-mol.-wt. S-**nitroso** compds. and thiols by high-performance liq. chromatog. and gas chromatog.-mass spectrometry)
- L9 ANSWER 4 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN
- TI Ratio of S-**nitrosohomocyst(e)ine** to homocyst(e)ine or other **thiols determines** neurotoxicity in rat cerebrocortical cultures
- AB . . . of many proteins can be regulated by S-nitrosylation or reaction of nitric oxide (NO)-related species with cysteine residues to produce S-**nitroso**proteins (S-**nitroso**thiols). However, S-**nitroso**thiols, such as S-**nitrosocysteine** (SNOC) and S-**nitrosohomocysteine** (SNHC), can also be neurotoxic by generating NO which reacts with endogenous O<sub>2</sub>- to form peroxynitrite. Addnl., thiols such as cysteine and **homocysteine** can be neurotoxic by acting as N-methyl-D-aspartate (NMDA) agonists. Paradoxically, we show here that millimolar thiol can protect from acute exposure to micromolar SNHC that is normally neurotoxic. This finding can be best explained by the fact that although S-**nitroso**thiols undergo homolytic cleavage to produce NO and subsequent neurotoxicity, adding thiol stabilizes S-**nitroso**thiols, effectively preventing this cleavage. Thus, the equil. between **thiol** and **nitrosothiol dets.** outcome in studies of neuronal degeneration.
- ST cerebrocortical neurotoxicity **nitrosothiol homocysteine** NMDA receptor; nitric oxide thiol **nitrosothiol** neurodegeneration
- IT Glutamate receptors  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (NMDA-binding; effects of thiols on S-**nitrosohomocysteine** neurotoxicity in cerebrocortical cultures)
- IT Neurotransmitter agonists  
 (NMDA; effects of thiols on S-**nitrosohomocysteine** neurotoxicity in cerebrocortical cultures)
- IT Brain  
 (cerebral cortex; effects of thiols on S-**nitrosohomocysteine**)

neurotoxicity in cerebrocortical cultures)

IT Nerve  
(degeneration; effects of thiols on S-nitrosohomocysteine neurotoxicity in cerebrocortical cultures)

IT Thiols (organic), biological studies  
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)  
(effects of thiols on S-nitrosohomocysteine neurotoxicity in cerebrocortical cultures)

IT Toxicity  
(neurotoxicity; effects of thiols on S-nitrosohomocysteine neurotoxicity in cerebrocortical cultures)

IT 139427-42-2, S-Nitrosohomocysteine  
RL: ADV (Adverse effect, including toxicity); BIOL (Biological study)  
(effects of thiols on S-nitrosohomocysteine neurotoxicity in cerebrocortical cultures)

IT 52-90-4, Cysteine, biological studies 70-18-8, Glutathione, biological studies 616-91-1, N-Acetylcysteine 6027-13-0, Homocysteine  
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)  
(effects of thiols on S-nitrosohomocysteine neurotoxicity in cerebrocortical cultures)

IT 10102-43-9, Nitric oxide, biological studies 11062-77-4, Superoxide 19059-14-4, Peroxynitrite  
RL: BSU (Biological study, unclassified); BIOL (Biological study)  
(effects of thiols on S-nitrosohomocysteine neurotoxicity in cerebrocortical cultures)

L9 ANSWER 5 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN

AB With a view to using total homocysteine (HCys) as a CV\* disease marker, a method has been developed for detg. its level in plasma, entailing derivatization and. . . a CZE-UV method has been devised to assay plasma for NO adducts and also nitrite and nitrate. Failure to find S-nitrosothiols in biosamples, even after concn. by freeze-drying, is attributed to insufficient sensitivity of the present method.

IT Thiols (organic), analysis  
RL: ANT (Analyte); ANST (Analytical study)  
(measurement of markers relating to thiols and nitric oxide in biofluids by HPLC and CE)

IT 6027-13-0, Homocysteine 10102-43-9, Nitric oxide, analysis 14797-55-8, Nitrate, analysis 14797-65-0, Nitrite, analysis  
RL: ANT (Analyte); ANST (Analytical study)  
(measurement of markers relating to thiols and nitric oxide in biofluids by HPLC and CE)

L9 ANSWER 6 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN

ST blood nitrosylHb detn photolysis chemiluminescence disease; nitroso thiol detn photolysis chemiluminescence

IT Hemoglobins  
Thiols (organic), analysis  
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)  
(S-nitroso; nitrosyl [Fe(II)]-Hb detn. by photolysis/chemiluminescence in relation to nitric oxide metab.)

IT Albumins, analysis  
RL: ANT (Analyte); ANST (Analytical study)  
(serum, S-nitroso; nitrosyl [Fe(II)]-Hb detn. by photolysis/chemiluminescence in relation to nitric oxide metab.)

IT Proteins, specific or class  
RL: ANT (Analyte); THU (Therapeutic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)



(sulfoproteins, **S-nitroso**; nitrosyl [Fe(II)]-Hb detn. by photolysis/chemiluminescence in relation to nitric oxide metab.)

IT 6027-13-0, **Homocysteine**  
 RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)  
 (metabolic disorders, hyperhomocysteinemia; nitrosyl [Fe(II)]-Hb detn. by photolysis/chemiluminescence in relation to nitric oxide metab.)

IT 51209-75-7, **S-Nitroso**-L-cysteine 56577-02-7, **S-Nitroso**-N-acetyl-L-cysteine 57564-91-7, **S-Nitrosoglutathione**  
 RL: ANT (Analyte); ANST (Analytical study)  
 (nitrosyl [Fe(II)]-Hb detn. by photolysis/chemiluminescence in relation to nitric oxide metab.)

L9 ANSWER 7 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN

AB A general assay procedure for a wide variety of thiols is described. The technique has three steps: (1) formation of **S-nitrosothiols** with nitrous acid, (2) destruction of the excess of nitrous acid, (3) hydrolysis of the **S-nitrosothiols** with mercuric ions and subsequent formation of an azo dye by means of the nitrous acid liberated. Both manual and . . .

ST **thiol detn** nitrosation spectrophotometry; flow injection spectrophotometry **thiol detn**; mercapto group detn peptide protein; peptide analysis thiol group; protein analysis thiol group; nitrous acid reagent **thiol detn**

IT **Thiols**, analysis  
 RL: ANT (Analyte); ANST (Analytical study)  
 (**detn.** of, by manual and flow-injection spectrophotometry)

IT Albumins, analysis  
 Peptides, analysis  
 Proteins, analysis  
 RL: ANST (Analytical study)  
 (**thiol-group detn.** in, by flow-injection spectrophotometry)

IT 52-67-5, Penicillamine 52-90-4, Cysteine, analysis 60-24-2 68-11-1, analysis 70-18-8, Glutathione, analysis 70-49-5, Mercaptosuccinic acid 79-42-5, 2-Mercaptopropionic acid 100-53-8, Toluene-.alpha.-**thiol** 106-45-6, 4-Toluenethiol 107-96-0, 3-Mercaptopropionic acid 108-98-5, Benzenethiol, analysis 156-57-0, 2-Mercaptoethylammonium chloride 1942-52-5 6027-13-0, **Homocysteine**  
 RL: ANT (Analyte); ANST (Analytical study)  
 (**detn.** of, by manual and flow-injection spectrophotometry)

=> d 19 2 ibib, iabs

L9 ANSWER 2 OF 7 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 2000:589948 CAPLUS

DOCUMENT NUMBER: 133:159498

TITLE: Compounds and methods for determination of thiols

INVENTOR(S): Dabovic, Milan

PATENT ASSIGNEE(S): MetaQuant Trust, USA

SOURCE: U.S., 9 pp.  
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DOCUMENT TYPE: Patent

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PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6107100	A	20000822	US 1998-79436	19980515
PRIORITY APPLN. INFO.:			YU 1998-196	A 19980430

ABSTRACT:

Compns. and methods are provided for detg. thiols or disulfides in which a sulfur contg. analyte is combined with a thiol-specific reagent to produce an intermediate, and the intermediate is combined with a solvent insol. compd. to produce a solid state complex. In one aspect of preferred embodiments the intermediate comprises a chromophore, and in esp. preferred embodiments the chromophore is detectable with the naked eye. In another aspect of preferred embodiments the thiol-specific reagent comprises a **nitroso**-donor, and more preferably Na-nitroprusside. In yet another aspect of preferred embodiments, the solvent insol. compd. comprises a basic or acidic metallic compd., or a polymeric matrix. Still more preferred solvent insol. compds. comprise Zn-hydroxide, Ni-hydroxide or Al-hydroxide. These compns. and methods are more sensitive and reliable method than that previously available, esp. for the detn. of **homocysteine**.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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COST IN U.S. DOLLARS

SINCE FILE	TOTAL
ENTRY	SESSION
43.02	130.01

FULL ESTIMATED COST

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE	TOTAL
ENTRY	SESSION
-5.86	-5.86

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